CLAIMS

1. A blood purification device, characterized in that it comprises a duct (17) for the flow of whole blood along which there is a stage (19) for filtering plasma from the whole blood, which is functionally arrangeable in connection to a plasma purification circuit (23), and a stage (21) for whole blood dialysis by means of plasma purified in said circuit (23), said stage (21) for whole blood dialysis comprising a selectively permeable interface for separating at least part of the whole blood stream of said duct (17) from a countercurrent stream of plasma purified in said circuit (23).

2. The blood purification device according to claim 1, characterized in that it comprises a filter (12), which is constituted by an internal compartment (13) crossed by parallel permeable capillaries (14), the space inside said capillaries (14) delimiting at least part of said duct (17) for the flow of said whole blood, said internal compartment (13) being divided, in the direction of the extension of said capillaries (14), into two separate compartments (18, 20), respectively a first compartment (18) that forms said stage (19) for filtering plasma from whole blood and a second compartment (20) that forms said stage (21) for dialyzing the whole blood by means of purified plasma in countercurrent with respect to the whole blood, said first and second compartments (18, 21) being mutually connected at the region where the countercurrent flow of said purified plasma ends, said first and second compartments (18, 21) being further functionally arrangeable in connection respectively to an input and an output of said plasma purification circuit (23).

3. The blood purification device according to one or more of the preceding claims, characterized in that it comprises a plasma purification circuit (23) filtered by said stage (19) for filtering plasma from whole blood, which is functionally connected to said stage (21) for dialyzing the whole blood by means of purified plasma, said plasma purification circuit (23) being functionally connected to said duct (17) downstream of both said

stage (19) for filtering plasma from whole blood and said stage (21) for dialyzing whole blood by means of purified plasma.

4. The blood purification device according to claim 3, characterized in that said plasma purification circuit (23) comprises a device (25) for removing water-soluble and dialyzable toxic molecules, which is generally used to purify blood but is used to purify plasma that arrives from said stage (19) for filtering plasma from whole blood.

5. The blood purification device according to claim 4, characterized in that said device (25) for removing water-soluble and dialyzable toxic molecules is composed of modules for performing diffusive processes such as high-flux dialysis, convective-diffusive processes, purely convective processes, membrane-based adsorptive processes.

6. The blood purification device according to claim 5, characterized in that said device (25) for removing water-soluble and dialyzable toxic molecules comprises a dialyzer (26) that is functionally connected to a dialysate tank (27), a used dialysate tank (28), and an infusate tank (29).

7. The blood purification device according to claim 3 or to subsequent claims, characterized in that said plasma purification circuit (23) comprises an adsorptive and/or perfusive purification module (30), used to purify plasma that arrives from said device (25) for removing water-soluble or dialyzable toxic molecules.

8. The blood purification device according to claim 7, characterized in that said adsorptive and/or perfusive purification module (30) comprises one or more adsorption columns and/or one or more perfusion columns on carbon.

9. A blood purification method comprising the steps of:

-- filtering plasma from whole blood,

-- purifying said plasma filtered from whole blood,

-- purifying said whole blood by flow in countercurrent of a stream of said purified plasma, separated from the stream of said whole

blood by a permeable interface.

10. The blood purification method according to claim 9, characterized in that

-- the plasma used in the countercurrent purification of said whole blood is joined with the plasma filtered from said whole blood

-- part of the plasma purified after filtration from whole blood is joined to the whole blood downstream of the filtering of the plasma from whole blood and of the countercurrent purification.

11. The blood purification method according to claim 10, characterized in that the purification of said plasma filtered from whole blood provides for a step for removing water-soluble and dialyzable toxic molecules by means of one or more processes in mutual combination, chosen among:

-- a diffusive process,

-- a convective-diffusive process,

-- a purely convective process,

-- a membrane-based adsorptive process.

12. The blood purification method according to claim 11, characterized in that said processes include:

-- high-flux plasma dialysis,

-- high-volume plasma filtration,

-- plasma filtration,

-- plasma diafiltration.

13. The blood purification method according to claim 12, characterized in that it comprises, at the end of said step of removing water-soluble and dialyzable toxic molecules, one or more column adsorption processes and/or column perfusion processes.